

From the paper above referred to, the definition of the Columbinæ, containing the genus *Columba*, may be thus stated:—

COLUMBINÆ. Columbidae possessing an ambiens muscle, intestinal cæca, an oil-gland, 12 rectrices, and no gall-bladder.

Whereas *Carpophaga* possesses the ambiens muscle, an oil-gland, a gall-bladder, and no intestinal cæca.

In *Ianthænas leucolæma* the ambiens muscle and the oil-gland are present, as are the intestinal cæca*. The gall-bladder is absent. This bird must therefore, together with *Columba*, *Turtur*, *Macropygia*, and *Ectopistes*, be placed in the Columbine and not in the Carpophagine division. The intestines are 47 inches in length, of average diameter; and the gizzard is typical in structure, having simple plicated pads.

Erythrænas pulcherrima.—This species is truly Ptilonopine in all its characters. As in *Ptilonopus*, the ambiens muscle is wanting, as are the cæca to the intestine. The gall-bladder is present; and the oil-gland is very small. The gizzard presents the peculiarities of that genus, although the four pads are not so regularly constructed, minor plications existing. There are 14 rectrices; and the intestines (which are capacious, as in all fruit-eating birds) are 16 inches in length.

4. On the Genus *Scotophilus*, with Description of a new Genus and Species allied thereto. By G. E. DOBSON, B.A., M.B., F.L.S.

[Received April 17, 1875.]

In 1820 the genus *Scotophilus* was founded by Dr. W. E. Leach † on a single immature specimen of a Bat which belongs probably to the species now generally known as *Nycticejus temminckii*, Horsf. ‡ That specimen was also made by Dr. Leach the type of his *Scotophilus kuhlii*; and this name would take precedence of Horsfield's if it were possible to determine decisively the adult form from an examination of the immature animal.

The specimen in question (which is preserved in alcohol in the British Museum) still retains the deciduous milk-teeth, which, in the case of the upper incisors, are two in excess of those found in all adult individuals belonging to this genus. It would therefore be quite impossible also to distinguish the genus as defined by Leach from Keyserling and Blasius's subgenus *Vesperus* §.

The question therefore arises, whether this genus, so very imperfectly defined, and founded on a specimen of an animal so immature that the species to which it belongs cannot be determined, should not be rejected altogether.

* These are extremely slender, and require special precautions to be taken for their demonstration.

† Trans. Linn. Soc. 1822, xiii. p. 71.

‡ Horsfield, 'Zoological Researches in Java,' 1825.

§ *Vesperus*, subgenus of *Vesperugo*, Keys. & Blas. (Wiegmann's Archiv, 1839, p. 312).

It has been suggested, however, by Dr. W. Peters, who has pointed out these facts*, that the name *Scotophilus* should be retained for those Bats inhabiting the Eastern Hemisphere, hitherto known as *Nycticeji*, which differ in many important respects, requiring generic separation, from the genus represented in the New World by *Nycticejus crepuscularis*, Le Conte, which possesses, numerically, the same dentition.

I have adopted Prof. Peters's suggestion, because zoological literature is thereby spared the burden of a new generic name. It still remains, however, to supplement the very imperfect and misleading original definition of *Scotophilus* by one from which the characters of this genus may be known and its members readily recognized. This is especially necessary; for since a large number of species representing very different groups were included by Dr. J. E. Gray under the common generic title *Scotophilus* †, this name has been indifferently applied, by English and American zoologists especially, to almost every species of Bat belonging to the family *Vespertilionidæ* of which the dental formula was known or suspected to represent less than thirty-eight teeth.

SCOTOPHILUS.

Muzzle short, obtusely conical, smoothly rounded off, naked: nostrils close together, opening by simple lunate apertures in front or sublaterally, their inner margins projecting: ears longer than broad, generally considerably shorter than the head, with rounded tips, the outer margin terminating behind the angle of the mouth in a distinct convex lobe; tragus tapering, generally subacutely pointed and curved inwards.

Tail shorter than the head and body, contained, except the terminal rudimentary vertebra, within the interfemoral membrane: calcaneum weak; wings attached or close to the base of the toes. Fur generally short and nearly confined to the body; wing- and interfemoral membranes very thick and leathery.

Skull thick, with prominent crests: occipital and sagittal crests often forming at their junction behind a thick projecting process from which the skull slopes evenly downwards and forwards to the end of the nasal bones in front; occiput concave, with prominent occipital crest; facial bones much shortened in front of infraorbital foramina, which are large and well defined; the bony palate very narrow behind last upper molar, extending backwards as far as the middle of the zygomatic arches; basioccipital between cochleæ broad; cochleæ partially concealed by the tympanic bullæ; paroccipital and mastoid processes well developed, prominent.

Dentition.—Inc. $\frac{1.1}{6}$; C. $\frac{1.1}{1.1}$; Pm. $\frac{1.1}{2.2}$; M. $\frac{3.3}{3.3}$.

An additional external incisor, on each side, above, in the young. Upper incisors long, unicuspidate, acute, close to the canines by their

* Monatsb. Akad. Wissensch. Berl. 1866, p. 679.

† "Revision of the Genera of Bats," Mag. Zool. & Bot. ii. pp. 497, 498 (1838).

bases; upper premolar large, exceeding the molars in vertical extent, and quite close to the canine: last upper molar consisting of a transverse plate only; first lower premolar small, *crushed in between the canine and second premolar*, which exceeds the molars in vertical extent. All the molar teeth very strong, with acute cusps.

Distribution.—Africa, Asia, and Australia. In Africa probably not south of Port Natal: in Asia confined to the warmer parts, extending from Afghanistan to Southern China and the Philippines: in Australia probably extending throughout the whole country.

This genus, though difficult to define, and approaching *Vesperugo*, Keys. & Blas., in many points, especially through certain species of that genus, contains a very natural group of Bats of very wide distribution (as above described) throughout the tropical and subtropical regions of the Eastern Hemisphere. They are distinguished specially by possessing a single pair of upper incisors separated by a wide space and placed close to the canines; by the small transverse first lower premolar crushed in between the approximated canine and second premolar, yet standing in the tooth-row; and, generally, by their short, conical, naked muzzle, and rather short and narrow ears; by their heavy bodies and strong limbs with remarkably thick and nearly naked leathery membranes; and by their short fur, generally olive- or chestnut-brown above, and yellowish or reddish white beneath.

Owing to the wide distribution and variableness in size and colour of the species of this genus, many different names have been given to the same species*; and this variableness and a close external resemblance between different species inhabiting distant countries has caused considerable difficulty in determining species from descriptions either very imperfect or based upon general characters only, such as the colour of the fur and measurements.

It is evident, therefore, that if some characters be found by which the species may be divided into subordinate groups or subgenera, the difficulty of determining the different species will be much lessened. Such characters I have found in the form of the internal basal lobe of the ear and in that of the tragus.

The species may therefore be arranged as follows:—

- A. Internal basal lobe of ear angular, inferior margin straight, forming with the ascending margin almost a right angle: tragus with a narrow prominent ridge passing across its front surface from the base of its inner margin (*Scotophilus*.)
- a. Upper incisors close to canines; premaxillary bones very narrow, leaving a wide space between them in front, nasal opening very large.
- a. Cingulum of the upper incisors very narrow *S. temminckii*, Horsf.
- β. Cingulum of the upper incisors forming a broad horizontal shoulder behind, scarcely raised above the level of the gum *S. borbonicus*, Geoff.

* E. g. *Scotophilus temminckii*, Horsf., = *Vespertilio belangeri*, Is. Geoff., = *Vespertilio noctulinus*, Is. Geoff., = *Vespertilio castaneus*, Gray, = *Nycticejus luteus*, Blyth, = *Nycticejus flavocolus*, Blyth.

- B. Internal basal lobe of ear convex, evenly rounded :
 front surface of tragus smooth (*Scoteinus*)
- a'. Ears nearly as long as the head; internal basal lobe commencing in a long lobule projecting backwards *S. emarginatus*, Dobson.
- b'. Ears much shorter than the head, internal basal lobe commencing in a short lobule.
- γ. Cingulum of the upper incisors with a small cusp posteriorly *S. rueppellii*, Peters.
- δ. Cingulum of the upper incisors without a posterior cusp *S. greyii*, Gray.
- b. Upper incisors separated from the canines by a short space; premaxillary bones more developed; nasal opening small (*Scotomanes*)
- e. Cingulum of the upper incisors with a distinct cusp posteriorly *S. ornatus*, Blyth.

This is not intended to represent a complete synopsis of the species of *Scotophilus*, but to indicate how the genus may be divided into groups, and to serve as a guide to determining the species. *Sc. ornatus* does not come properly under either of the first two groups; I have therefore placed this species by itself.

This very remarkable species, which inhabits the warm valleys among the hills below Darjeeling, the Kasia Hills, and Kakhyan ranges, Yunan, is distinguished from all the other species of *Scotophilus* by the peculiar pied condition of the fur*, in which and in other respects, as in the form of the ear and tragus and shape of the head and muzzle, it approaches the American genus *Atalapha*.

If the skull be compared with that of a full-grown specimen of *Sc. temminckii*, the following differences may be observed:—

In *Sc. temminckii* the superior angle of the occipital crest forms with the sagittal crest a prominent projection; in *Sc. ornatus* this projection is small, the sagittal crest is more developed in front, and the postorbital processes are larger. The frontal in *Sc. ornatus* is grooved in the centre; in *Sc. temminckii* it forms a plane surface. In *Sc. ornatus* the premaxillary bones are much more developed and the nasal opening is not half the size of that in *Sc. temminckii*; the incisors also are placed at the inner side of the premaxillaries and separated from the canines by a space. In *Sc. ornatus* the bony palate is much broader behind the last molars, and does not extend so far backwards.

In the upper jaw, the teeth (with the exception of the incisors, which are separated from the canines and have an acute short posterior cusp) are very similar in both species: in the lower jaw

* The following is a description of the colour of the fur in *Sc. ornatus*:— In males, above light chestnut, on the crown of the head a small longitudinal patch of pure white; from the back of the head, for two thirds the length of the spine, a narrow interrupted band of white extends longitudinally; at the base of the ears posteriorly a patch of white; on either side of the body two white patches, one in front of the head of the humerus, the other behind it: on the under surface a band of white round the neck connects the spots behind each ear, this is succeeded by a band of chestnut-brown, followed by a band of white and succeeded by pale brown, which extends to the root of the tail. In females the fur is much darker throughout, and the white spots and bands of less size and occasionally altogether absent in certain places.

the first premolar is less crushed in between the canine and second premolar than in any other species of the genus; it is, however, similarly flattened from before backwards, and has two short cusps arising internally from the cingulum, which are not found in the other species.

Sc. greyii (included in synopsis above) has been named but not described. I therefore add a description of this species (the smallest of the genus known), taken from an examination of the types in the British Museum, and from a specimen of an adult male, preserved in alcohol, from Port Essington in North Australia, presented by the Earl of Derby to the National Collection.

SCOTOPHILUS GREYII.

Scotophilus greyii, Gray, List of the Specimens of Mammalia in the British Museum, 1843 (not described); Voy. 'Erebus' and 'Terror,' 1844, pl. 20 (not described).

Crown of the head slightly elevated above the face-line; muzzle flat above, rather broad, glandular prominences on the sides of the face moderately developed: ears short, triangular, shortly rounded off above; basal lobe of inner margin rounded, ascending portion slightly convex, emarginate opposite the base of the tragus, and terminating in a distinct rounded lobe. Tragus broad, obtuse, with a triangular lobule near the base; inner margin straight, outer straight below, sloping inwards above from a point opposite the middle of the inner margin.

Wings to the base of the toes; postcalcaneal lobe small, but distinct, rounded, placed on the calcaneum at a distance from the ankle equal to the breadth of the foot; last caudal vertebra free.

Above chestnut-brown throughout; beneath similar, the extreme points of the hairs ashy.

Upper incisors close to base of canines, inclined forwards and inwards; lower incisors not crowded, indistinctly lobed; lower canines without internal basal cusp; first lower premolar small and blunt, crushed in between the canine and second premolar and pushed slightly inwards; posterior upper molar equal to half antepenultimate molar.

Length: head and body 1''·7, tail 1''·3, ear 0''·5, forearm 1''·38, tibia 0''·5, foot and claws 0''·35.

The following description of a new genus and species has been taken from a specimen preserved in alcohol, which had been obtained in the Bellary Hills, Southern India, by the Hon. J. Dormer, and presented by him to the British Museum.

SCOTOZOUS, nov. gen.

General characters those of *Vesperugo*, Keys. & Blas., but with two incisors only in the upper jaw.

Dentition.—Inc. $\frac{1.1}{6}$; C. $\frac{1.1}{1.1}$; Pm. $\frac{2.2}{2.2}$; M. $\frac{3.3}{3.3}$.

The upper incisors large, unicuspidate, like small canines; each incisor close to the canine by its base, but inclined forwards and

inwards towards its fellow of the opposite side; first upper premolar minute, in the inner angle between the canine and the second premolar; first lower premolar not crushed in between the canine and second premolar.

SCOTOZOUS DORMERI, n. sp.

Crown of the head scarcely raised above the face-line; glands between the nostrils and eyes well developed, but not causing a depression between them on the muzzle; nostrils opening sublaterally, the space between divided in the centre by a narrow vertical band passing downwards to the lip as in *Vesperugo pipistrellus*: ears shorter than the head, triangular, with rounded tips; upper third of outer margin of the ear faintly concave, then gradually convex, again slightly concave opposite the base of the tragus, and terminating in a rounded lobe below the eye, on a level with the angle of the mouth. Tragus with a small triangular lobe near the base of the outer margin, outer and inner margins parallel as far as the upper third of the outer margin, where the outer margin slopes suddenly upwards and inwards, meeting the inner margin at an angle.

Thumb armed with a strongly curved claw; postcalcaneal lobe distinct, triangular; tip of tail projecting; wings from the base of the claws; foot rather large, first toe nearly equal to the others in length.

Fur above brown, the extreme tips ashy; beneath darker brown, the terminal third of the hairs white.

A single large and acutely pointed unicuspidate incisor on each side above, directed forwards and inwards; this tooth almost touches the canine by its base; but its summit is closer to its fellow of the opposite side, owing to its direction inwards; from the outer side of its cingulum a very small spur projects. Second upper premolar large, equal to three fourths the canine in vertical extent, and placed close to it; in the small triangular space inside, between it and the canine, a minute premolar may be seen with the aid of a lens, not visible from without. Posterior upper molar equal to half the antepenultimate molar. Lower incisors crowded; middle incisors slightly larger than the others, all distinctly trifold: lower canines without a cusp from inner margin of cingulum. First lower premolar shorter than the second premolar, but in transverse diameter rather greater, nearer by its summit to the second premolar than to the canine.

Length: head and body 1".5, tail 1".15, head 0".6, ear 0".45, tragus 0".18, forearm 1".25, thumb 0".25, second finger 1".85, fourth finger 1".4, tibia 0".4, foot and claws 0".28.